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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/786,885

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Grant C. Zenkner

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EXAMINER

HUSON, MONICA ANNE

ART UNIT

PAPER NUMBER

1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/786,885	Applicant(s) ZENKNER ET AL.	
	Examiner Monica A. Huson	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 20-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the Amendment filed 21 November 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino (U.S. Patent 3,703,422), in view of Irvine (U.S. Patent 3,334,383). Regarding Claim 1, Yoshino shows that it is known to carry out a method of processing a composite component, comprising: providing a lay-up mandrel (Figure 3, element 15); forming a prepreg material on the non-planar portion of a lay-up mandrel (Figure 3, element 17); after forming the prepreg material on the layup portion, providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material (Figure 3, element 18); providing a bagging film over the elastomeric caul (Figure 2, element 11); sealing the bagging film to the layup mandrel (Column 2, lines 59-64); applying a vacuum under the bagging film and thereby reducing a pressure between the elastomeric caul and the lay-up mandrel (Column 3, lines 33-35); and stretching the elastomeric caul due to the pressure reduction into a second position such that the second portion of the elastomeric caul is drawn into substantially continuous engagement with proximate to at least one of the prepreg material and the lay-up mandrel (Column 2, lines 65-67; Column 3, lines 33-35). Yoshino does not show a non-planar mandrel or a void between the caul and the prepreg material. Irvine shows that it is known to carry out a vacuum molding process wherein the mandrel has a non-planar portion (Figure 2, element 34), and wherein a void is formed between the caul and the prepreg material, the caul having a perimeter non-sealingly engaged with the layup mandrel (Figure 2, element 38=caul, element 36=prepreg). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel and caul and prepreg relationship during

Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 2, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, including a method wherein forming a prepreg material on the mandrel includes forming a partially cured prepreg material on the portion, further comprising, with the elastomeric caul stretched into the second position, applying at least one of an elevated temperature and an elevated pressure to the prepreg material to fully cure the partially cured resin of the prepreg material (Column 2, lines 68-70; full cure=Column 3, lines 1-3), meeting applicant's claim.

Regarding Claim 3, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a non-planar mandrel. Irvine shows that it is known to carry out a method wherein the mandrel includes a non-planar portion, and wherein providing an elastomeric caul over the prepreg material in an initial position includes providing a stretchable elastomeric caul wherein, in a relaxed state the elastomeric caul is not shaped to conform to the non-planar portion (Figure 2). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 4, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show a non-planar mandrel. Irvine shows that it is known to carry out a method wherein the mandrel includes a step-shaped portion and wherein forming a prepreg material on a mandrel includes forming a prepreg material on the step-shaped portion of the mandrel (Figure 2). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 5, Yoshino shows the process as claimed as discussed in the rejection of Claim 4 above, but he does not show a step-shaped mandrel. Irvine shows that it is known to carry out a method wherein the step-shaped portion of the mandrel includes an upper step portion, a middle step portion extending downwardly from the upper step portion, and a lower step portion extending away from the middle step portion, and wherein providing an elastomeric caul over the prepreg material in an initial position includes providing the elastomeric caul over the prepreg material such that the first portion of the caul is engaged with the prepreg material on the upper step portion and the second portion of the caul extends between the upper step portion and the lower step portion (Figures 2-3). It would have been

prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 12, Yoshino shows that it is known to carry out a method of processing a composite component, comprising: providing a lay-up mandrel (Figure 3, element 15); forming a prepreg material on the non-planar portion of a lay-up mandrel (Figure 3, element 17); after forming the prepreg material on the layup portion, providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material (Figure 3, element 18); providing a bagging film over the elastomeric caul (Figure 2, element 11); sealing the bagging film to the layup mandrel (Column 2, lines 59-64); applying a vacuum under the bagging film and thereby reducing a pressure between the elastomeric caul and the lay-up mandrel (Column 3, lines 33-35); and stretching the elastomeric caul due to the pressure reduction into a second position such that the second portion of the elastomeric caul is drawn into substantially continuous engagement with proximate to at least one of the prepreg material and the lay-up mandrel (Column 2, lines 65-67; Column 3, lines 33-35), and curing the composite material with the elastomeric caul stretched in the second position (Column 3, lines 36-37). Yoshino does not show a non-planar mandrel. Irvine shows that it is known to carry out a vacuum molding process wherein the mandrel has a non-planar portion (Figure 2, element 34), and wherein a void is formed between the caul and the prepreg material, the caul having a perimeter non-sealingly engaged with the layup mandrel (Figure 2, element 38=caul, element 36=prepreg). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel and caul and prepreg relationship during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 13, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, including a method further comprising forming a prepreg material on the mandrel includes forming a partially cured prepreg material on the portion, further comprising, with the elastomeric caul stretched into the second position, applying at least one of an elevated temperature and an elevated pressure to the prepreg material to fully cure the partially cured resin of the prepreg material (Column 2, lines 68-70; full cure=Column 3, lines 1-3), meeting applicant's claim.

Regarding Claim 14, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, but he does not show a non-planar mandrel. Irvine shows that it

is known to carry out a method wherein providing an elastomeric caul over the prepreg material in an initial position includes providing a stretchable elastomeric caul wherein, in a relaxed state the elastomeric caul is not shaped to conform to the non-planar portion (Figure 2). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Regarding Claim 15, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, but he does not show a step-shaped mandrel. Irvine shows that it is known to carry out a method wherein the step-shaped portion of the mandrel includes an upper step portion, a middle step portion extending downwardly from the upper step portion, and a lower step portion extending away from the middle step portion, and wherein providing an elastomeric caul over the prepreg material in an initial position includes forming the partially-cured composite material such that the first portion of the caul is engaged with the prepreg material on the upper step portion and the second portion of the caul extends between the upper step portion and the lower step portion (Figures 2-3). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to use Irvine's mandrel during Yoshino's process in order to form a composite component which has a desired shape including non-planar portions.

Claims 6-11, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshino and Irvine, further in view of Mead (U.S. Patent 6,620,369).

Regarding Claim 6, Yoshino shows the process as claimed as discussed in the rejection of Claim 5 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein providing an elastomeric caul over the prepreg material in an initial position includes providing the elastomeric caul over the prepreg material such that a third portion of the caul adjacent the second portion and opposite the second portion from the first portion is engaged with the lower step portion of the mandrel (Figure 5). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 7, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein providing an elastomeric caul over the prepreg material in an initial position includes securing an initial

portion of the elastomeric caul into a fixed position relative to the mandrel, the third portion of the caul being adjacent the second portion and spaced apart from the prepreg material, and wherein the method further comprises reducing a second pressure between the bagging film and the elastomeric caul (Figure 5). It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 8, Yoshino shows the process as claimed as discussed in the rejection of Claim 7 above, but he does not show a securement of the caul. Mead shows that it is known to carry out a method wherein securing a third portion of the elastomeric caul includes sealing the elastomeric caul (Figures 8 and 10, element 56; It is interpreted that Mead's sealant is functionally equivalent to a clamping member). It would have been obvious for one of ordinary skill in the art to provide a clamping member to seal the first, flexible vacuum bag (caul) as an equivalent alternative to the sealant in the process of Mead, during Yoshino's molding method, because of known advantages such as simplicity and cleanliness and also because sealants and clamping members are known to be equivalent alternatives.

Regarding Claim 9, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein reducing a pressure within a space disposed between the elastomeric caul and the mandrel includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel by reducing the pressure within the space (Figure 5). It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 10, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show using a release layer. Mead shows that it is known to carry out a method further comprising providing a release layer between the prepreg material and the elastomeric caul (Figure 5). It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to use Mead's release layer during Yoshino's molding process in order to easily remove the caul from the prepreg.

Regarding Claim 11, Yoshino shows the process as claimed as discussed in the rejection of Claim 1 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein

comprising providing an elastomeric caul over the prepreg material in an initial position further includes providing an elastomeric caul having a third portion adjacent the first portion and spaced apart from the prepreg material, and wherein stretching the elastomeric caul into a second position further includes stretching the elastomeric caul such that the third portion is drawn into continuous engagement with proximate at least one of the prepreg material and the lay-up mandrel (Figure 5). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 16, Yoshino shows the process as claimed as discussed in the rejection of Claim 5 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein providing an elastomeric caul over the composite material in an initial position includes providing the elastomeric caul over the composite material such that a third portion of the caul adjacent the second portion and opposite the second portion from the first portion is engaged with the lower step portion of the mandrel (Figure 5). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 17, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein providing an elastomeric caul over the composite material in an initial position includes securing an initial portion of the elastomeric caul into a fixed position relative to the mandrel, the third portion of the caul being adjacent the second portion and opposite the second portion from the first portion (Figure 5). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 18, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein reducing a pressure within a space disposed between the elastomeric caul and the mandrel includes securing a third portion of the elastomeric caul into a fixed position relative to the mandrel by reducing the pressure within the space (Figure 5). It would have been prima facie

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obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Regarding Claim 19, Yoshino shows the process as claimed as discussed in the rejection of Claim 12 above, but he does not show placement of the caul including a third portion at a specific location. Mead shows that it is known to carry out a method wherein comprising providing an elastomeric caul over the composite material in an initial position further includes providing an elastomeric caul having a third portion adjacent the first portion and spaced apart from the composite material, and wherein stretching the elastomeric caul into a second position further includes stretching the elastomeric caul such that the third portion is drawn into continuous engagement with proximate at least one of the composite material and the lay-up mandrel (Figure 5). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to follow Mead's placement of the caul during Yoshino's molding process in order to properly form the final product according to customer specifications.

Response to Arguments

Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A. Huson whose telephone number is 571-272-1198. The examiner can normally be reached on Monday-Friday 7:00am-4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica A Huson
Primary Examiner
Art Unit 1791

/Monica A Huson/
Primary Examiner, Art Unit 1791